

(12) UK Patent Application (19) GB (11) 2 104 600 A

(21) Application No 8224399
(22) Date of filing 25 Aug 1982
(30) Priority data
(31) 3133777
(32) 26 Aug 1981
(33) Fed. Rep. of Germany (DE)
(43) Application published
9 Mar 1983

(51) INT CL³
F16C 33/54
(52) Domestic classification
F2A 5D2 5E 5F D62 D64
(56) Documents cited
GB 1563935
GB 1355569
DE—OLS A 2446506

(58) Field of search
F2A

(71) Applicants
FAG Kugelfischer Georg
Schäfer and Co.
(FR Germany),
Postfach 1260, D—8720
Schweinfurt 1, Federal
Republic of Germany

(72) Inventor
Bernhard Knappe

(74) Agents
Bromhead and Co.,
30 Cursitor Street,
Chancery Lane, London
EC4A 1LT

(54) A segmented cage for a ball or roller bearing

(57) A segmented cage for a ball or roller bearing, in which adjacent segments (3) are connected by bands

pressed into grooves (3') provided in each segment. Each band is preferably constructed as a substantially continuous annular member (5) capable of holding the cage on the inner or the outer race of the bearing.

Fig. 1

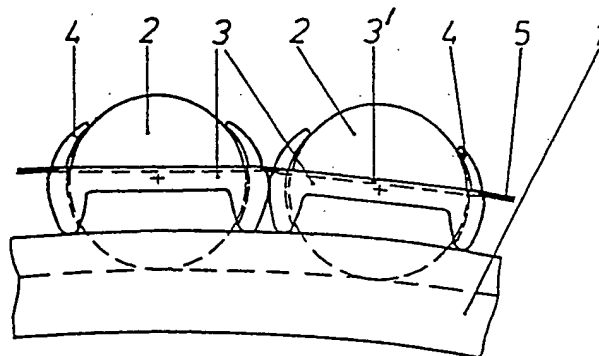
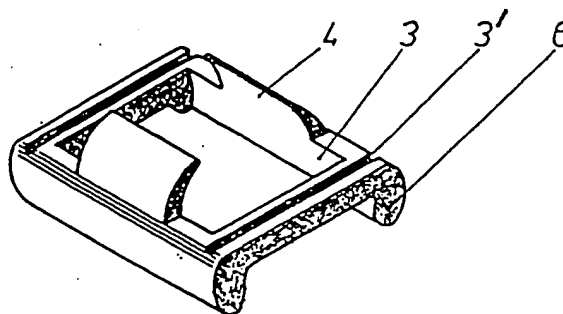


Fig. 3



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Fig. 1

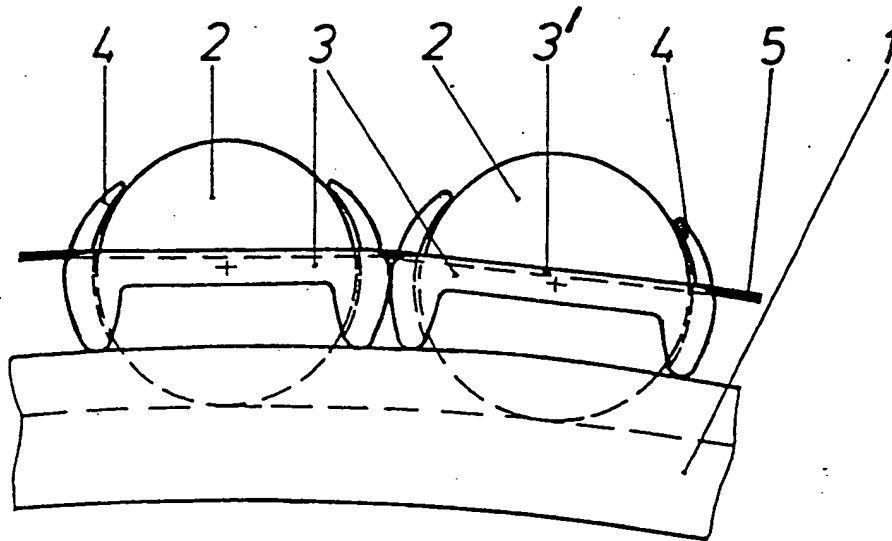


Fig. 2

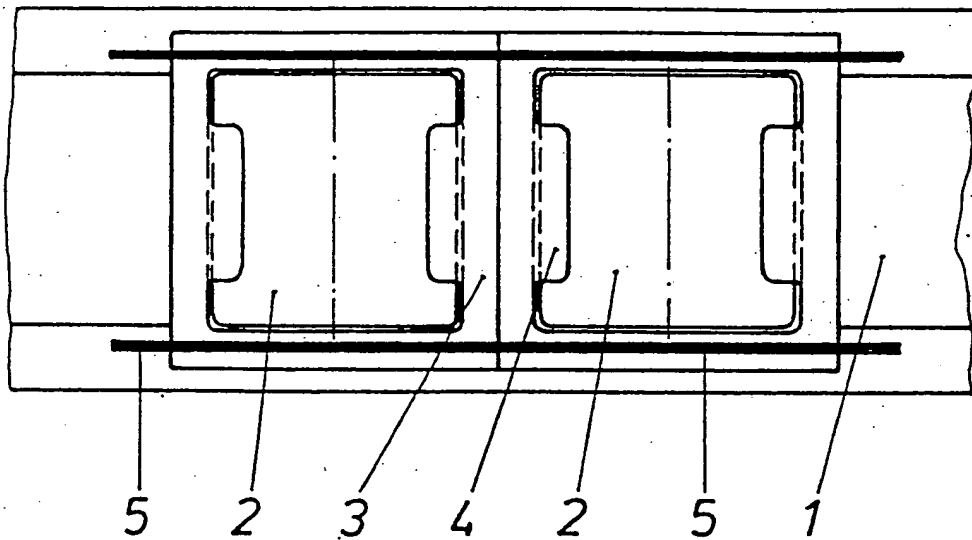
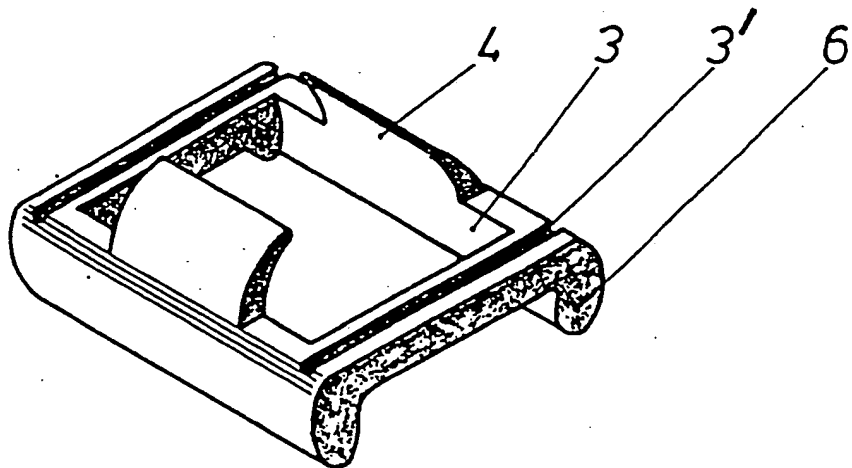


Fig. 3



SPECIFICATION

A segmented cage for a ball or roller bearing

This invention relates to a segmented cage for a ball or roller bearing, in which adjacent segments

5 are connected by links.

A shallow roller cage for bearings used in connection with sliding machine components or slowly rotating large drums is known from the published German Patent Application No. 24 46 506 according to which grooves are moulded into the cage's longitudinal edges defining the the pockets for the rolling elements. Sections of steel wire are inserted into the grooves and connect the segments forming the cage.

15 These steel-wire sections also require to be pressed into axially-extending grooves and are, therefore, of a specific configuration which is expensive to produce but without which it would be impossible to hold the segments together.

20 Moreover, this known arrangement provides a rigid connection of the segments, the disadvantage of which is that speed variations of the rolling elements are not balanced out. Such a cage construction cannot be used in a radial bearing for a shaft rotating at comparatively high speeds. Moreover, in addition to being expensive to manufacture it also expensive to assemble.

It is an aim of the invention, therefore, to provide a segmented cage which prevents the rolling elements and cage segments from falling apart even if the bearing is dismantled, which can be held on the inner or the outer race and be inserted into bearings of different diameters, which without changing the clearance of the pockets balances out any variation of the rotational speed of the rolling elements and which is cheap to manufacture and to assemble.

Accordingly, the invention provides a segmented cage for a ball or roller bearing, in which adjacent segments of the cage are connected by links, in which the links are bands which are pressed into grooves provided in the segments, for holding the cage on the inner or outer race of the bearing.

45 Any two adjacent segments may be connected by two spaced bands each pressed into a respective one of two spaced grooves in each of the segments with the result that two spaced rows of bands connect the segments of the cage. The bands may be made of an elastic material or they may be springs. The bands are preferably constructed so as to form two substantially continuous annular members which may encircle all the segments.

55 One of the advantages of a segmented cage according to the invention is that it is cheap to manufacture since it can be injection moulded; in addition, it is wear-resistant, light in weight and has good muffling and low friction characteristics.

60 Another advantage of a cage according to the invention is that it can be used at high speeds and — for one size of rolling elements — in all bearing diameters. As a result, one-piece cages of complicated designs, and thus expensive to

65 manufacture, are no longer required.

The invention will hereinafter be described in more detail with reference to one embodiment thereof illustrated in the drawing, in which:

70 Figure 1 is a cross-sectional view of a part of a roller bearing including a segmented cage according to the invention;

Figure 2 is a top view of the roller bearing part shown in Figure 1; and

75 Figure 3 is a perspective view of a single cage segment.

The reference numeral 1 in Figures 1 and 2 denotes the inner race. The outer race is not illustrated. Rolling elements 2 which are pressed into segments 3 shaped like little boxes are arranged between the inner and the outer races. For this purpose, the segments are provided with resilient retaining lobes 4. Two bands constructed in the embodiment illustrated as two continuous annular members 5 each arranged close to a respective one of the two end faces of the rolling elements encircle all the segments and press them against the inner race 1 so that they cannot fall apart even if the outer race is removed. The two bands which, may be, for example, spiral springs are pressed into grooves 3' provided in the segments 3 and extending in the circumferential direction.

The segments are provided, as will be seen from Figure 3, at each of their circumferential end portions with a protuberance 6 arranged to slide on the support rims of the inner race. The pockets for the rolling elements match the rolling elements' profile and prevent them from dropping out. It is evident that such a segment may cheaply be manufactured of a synthetic substance, for example by injection moulding. Likewise, the bands or the continuous members which encircle the segments and hold them together may be made of a material inexpensively obtainable by the metre.

Although the cage shown in the drawing has the annular members 5 arranged to press the segments against the inner race 1, it may be convenient, in certain instances, for the annular members to be differently arranged so as to press the segments against the outer race.

CLAIMS

1. A segmented cage for a ball or roller bearing, in which adjacent segments of a cage are connected by links, in which the links are bands which are pressed into grooves provided in the segments, for holding the cage on the inner or the outer race of the bearing.

2. A segmented cage according to claim 1, in which the adjacent segments are connected by two spaced bands each pressed into a respective one of two spaced grooves in each of the segments, and wherein the spaced bands are arranged in two rows.

3. A segmented cage according to claim 1 or claim 2, in which the bands are elastic.

4. A segmented cage according to claim 3, in

which the bands are made of an elastic material.

5. A segmented cage according to claim 3, in which the bands are springs.

5 6. A segmented cage according to any of the claims 3 to 5, in which the bands are each constructed as a substantially continuous annular member.

7. A segmented cage according to claim 6, in which the or each member encircles all the 10 segments.

8. A segmented cage for a ball or roller bearing, constructed and arranged substantially as herein described with reference to the accompanying illustrative drawing.